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ABSTRACT

This copiously illustrated document is designed to be a field guide to birds of prey that are common to Wisconsin, as well as to some that enter the state occasionally. An introduction discusses birds of prey with regard to migration patterns, the relationship between common names and the attitudes of people toward certain birds, and natural signs that indicate the occurrence of certain types of birds. A section on hawks, vultures and eagles contains silhouette patterns, drawings, a simple dichotomous key, and specific information about buteos, accipiters, falcons, harriers, osprey, eagles, and vultures. The section on owls explains some of the special adaptations that owls possess, along with drawings, a dichotomous key, and information on ten owls that are common to Wisconsin. A special section addresses birds of prey that may be rare worldwide, or at least are rarely seen in Wisconsin. Specifications and tips about building nest boxes are included, along with a list of the scientific names of the birds described, and a reference list of books and organizations which relate to birds of prey. (TW)

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BIRDS OF PREY OF WISCONSIN

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By Frances Hamerstrom
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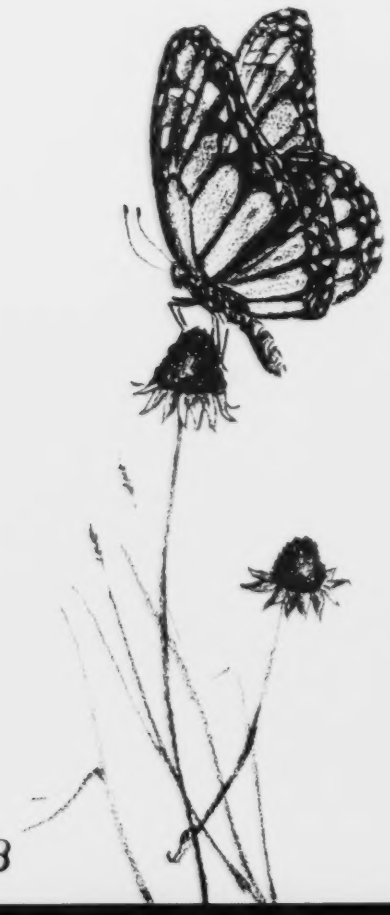
birds of prey of wisconsin



By Frances Hamerstrom
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Department of Natural Resources, and
Madison Audubon Society

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Migration

In autumn, when the wind swings into the northwest the eagles and hawks migrate–riding thermals on the way south to their wintering grounds. They follow paths in the sky by the western shores of lakes and along rivers and ridge tops.

The young do not travel with their parents. In general they migrate first.

The little species like kestrels and sharpshins start south in late summer when monarch butterflies are on the move too.

On a good migration day by late September, when the popples have turned gold, buteos, accipiters, falcons and ospreys start to ride the winds of the great travel lanes. It almost seems that they are travelling in mixed flocks. They are not: they are sharing the same air currents. Of hawks passing through Wisconsin, only the broad-winged hawk travels in great flocks and these flocks are called "kettles". A single kettle often consists of hundreds of broadwings wending their

way toward South America.

Not until the leaves have fallen and frost hits at night do the big buteos–the redtails and roughlegs–the goshawks and also the eagles pass through in the greatest numbers.

Some raptors loaf along on their way south. The falcons tend to travel fast. A kestrel, banded in Wisconsin was taken in Texas eleven days later.

Wisconsin's hawks tend to spend only part of their lives within the state. Some–like the merlins and tundra peregrines–travel through on the great flyways like tourists heading south in winter (and returning north in spring), but they are travelling far farther, many between Canada and South America.

Except for a few hardy individuals, the hawks that nest in Wisconsin move farther south to winter. Birds of the far north also pull south to winter in milder climates where hunting is better for them. Some select Wisconsin. Roughlegs, goshawks, and now and then a gyrfalcon, winter in our state.

Wisconsin has more resident owls. The great horned owl, barred owl, and screech owl tend to spend their entire lifetimes near their birthplace, although the young–said to be driven away by their parents when they are ready to take care of themselves–sometimes wander many miles before they find an area in which to set up a nesting territory for themselves. At least some snowy owls reared on the tundra, invade Wisconsin each winter. Hawk owls, boreal owls and great gray owls sometimes appear from the north and there have been records of burrowing owls that must have drifted in from the west. Only the saw-whet moves in great numbers along the Wisconsin flyways, but unlike the hawks, travelling at night. Some of the most dramatic journeys are made by barn owls; banded birds have been retrieved in the far south and at sea.

New Names for Old

Our attitudes toward the birds of prey have changed through the years. One used to speak of good hawks and bad hawks. In 1894 A.K. Fisher suggested that those interested distinguish between "friends" and "foes" and thus be spared the necessity of indiscriminate slaughter. The duck hawk was one of five "harmful"–that is, bad–species listed! A moral judgment. Nowadays they are treasured and few begrudge them a few ducks. One can still get into lively argument with bird lovers who complain that a "sparrow hawk" is utilizing their bird feeder and passing up the sunflower seeds in favor of chickadees. One can change Nature's ways only so much and it is about as silly to blame a hawk for eating meat as to insist that the family cat subsist on lettuce.

To protect these birds by giving them a better image, the "duck hawk" is now called peregrine falcon, the "pigeon hawk", merlin, the "sparrow hawk", kestrel, and the "marsh hawk", harrier. There is another good reason for not calling the kestrel "sparrow hawk", for the British long ago gave this name to an accipiter. Still more proposed name changes are indicated on Page 58.

How to Read Sign

Hawk whitewash

Owl whitewash

The raptors mark where they have been and once one has learned to read sign, as woodsmen and professional ornithologists do, one can study food habits. Meat and fish-eating birds pass conspicuous white urates, commonly called whitewash, and they regurgitate pellets. The splashes of whitewash under a perch suggest that a bird of prey may have used the perch. Herons, for example, also pass their urates in the form of whitewash, but if the perch is far from a body of water or from a heron rookery, the whitewash was probably passed by a hawk, an owl or a crow. The whitewash of hawks is rather splashy and falls in spatters and streaks. That of owls is far more solid, chalky in texture and tends to form little heaps.

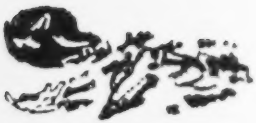
Owls tend to gulp their food in big mouthfuls, swallowing many bones—large and small—along with the meat. The bones, only slightly digested, persist in the pellets of adults. One can learn a great deal about what owls have eaten by examining the contents of pellets carefully.

Hawks feed more daintily than owls and swallow fewer big bones. They appear to have stronger digestive juices and it is often difficult to learn what they have been eating by pulling their pellets apart for few if any bones remain.

Pellets are normally regurgitated once a day and fresh pellets—especially of owls—are covered with a moist iridescent sheen. Pellets that have weathered for some weeks or months bleach out to a grayish white.

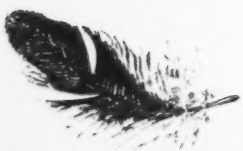
When one finds a partly eaten carcass if is often hard to tell what killed the animal. If one sees a raptor feeding on a carcass it is far from proof that the raptor has killed it. In the first place the buteos and the eagles

Hawk pellets



Owl pellets

(and of course vultures) frequently feed on carrion. It is often not simple to tell whether or not a raptor flushed "in the act" of eating a bird actually killed it. If the feathers plucked from the dead bird have little pieces of tissue sticking to their bases, the bird was plucked cold and died from another cause. If, on the other hand, the bases of the plucked feathers are smooth and clean, the bird was plucked "hot" and was recently killed. But birds of prey may steal kills from each other. For example, a harrier may nail a juicy morsel, only to lose it in a matter of moments to a more powerful bird such as a redtail.



Plucked hot

Plucked cold

Reading sign is an art to be approached critically and with caution...Ernest Thompson Seton and Paul L. Errington were masters of this skill. Reading sign—pellets, whitewash, tracks and talon or tooth marks—is disciplined, fascinating detective work. Not everyone has this bent of mind.

HAWKS, VULTURES AND EAGLES

Vultures and eagles are ordinarily recognized by their enormous size. Wisconsin hawks can often be recognized by their distinctive silhouettes. Four of the common groups are...

BUTEOS have broad wings and short tails.

ACCIPITERS have short wings and long tails.

FALCONS have pointed wings and rather short tails.

HARRIERS have long wings and long tails.

Osprey

Bald eagle

Golden eagle

Turkey vulture

Field Key to Wisconsin Hawks, Vultures and Eagles

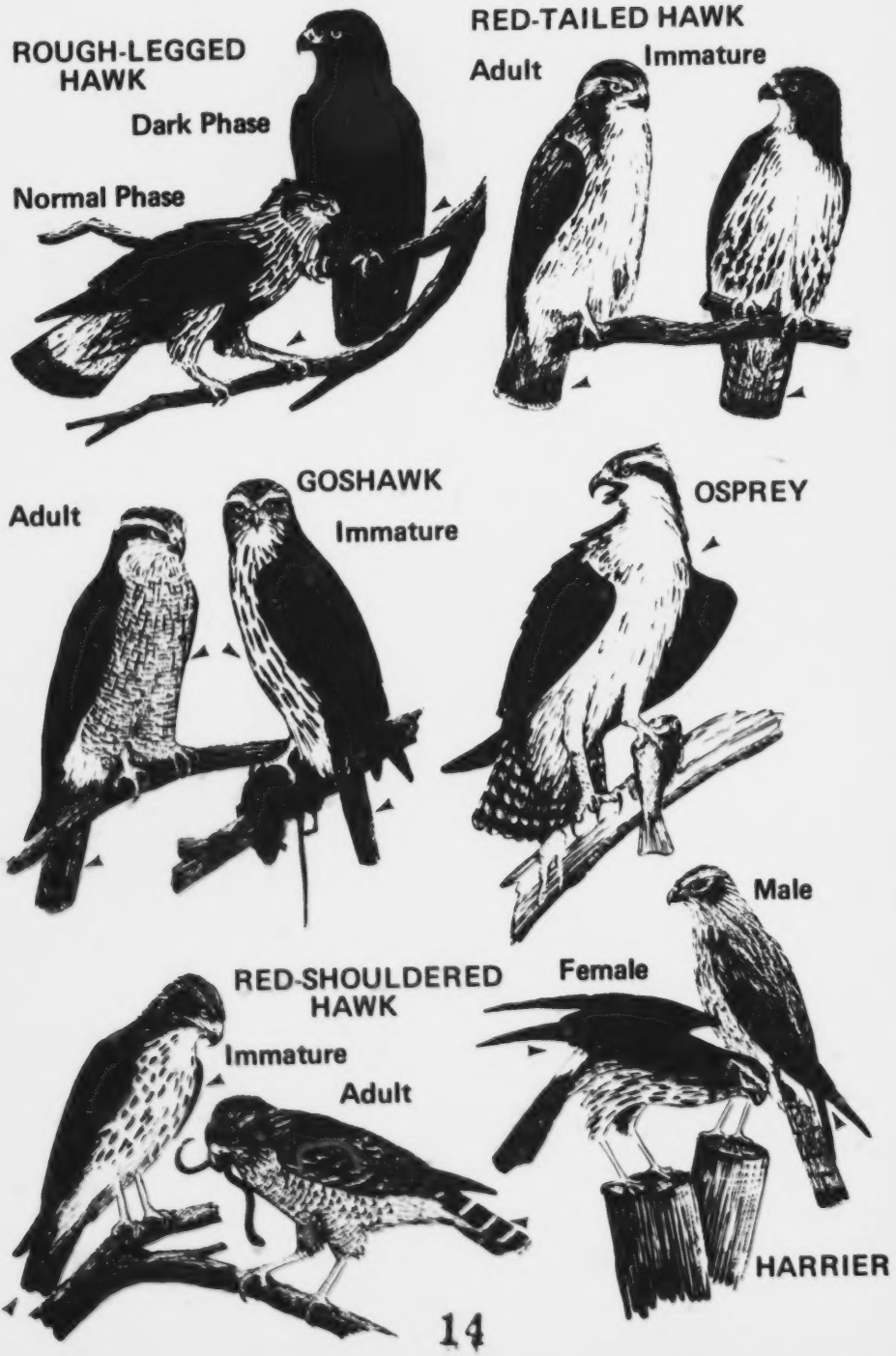
- HUGE (turkey-sized)–length 33 inches or more
  - A. Head bare–no feathers . . . . . **Turkey Vulture**
  - A. Head feathered–B.
    - B. Legs feathered to the toes . . . . . **Golden Eagle**
    - B. Lower leg bare . . . . . **Bald Eagle**

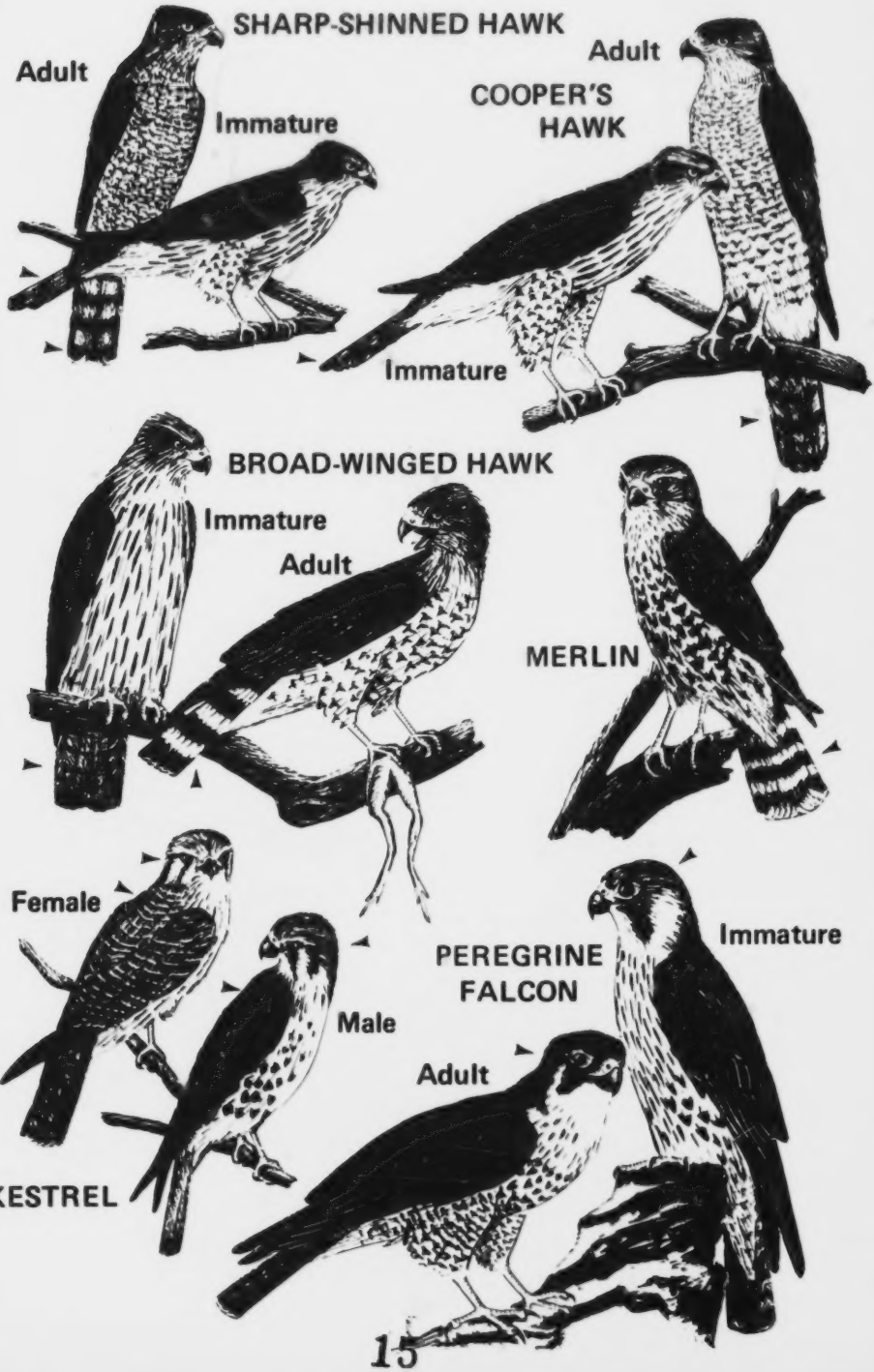
- NOT HUGE (somewhat larger than crow)–17-25 inches
  - C. Legs feathered to the toes . . . . . **Roughleg**
  - C. Lower leg bare–D.
    - D. Tail red . . . . . **Adult Redtail**
    - D. Tail other–E.
      - E. Tail long, 4 dusky bands; breast streaked or finely barred . . **Goshawk**
      - E. More than 4 bands–F.
        - F. Tail 6-8 bands–G.
          - G. Breast pure white . . . . . **Osprey**
          - G. Breast not pure white–H.
            - H. Lower breast with dark mottling; tail with bands . . **Immature Redtail**
            - H. Breast lightly streaked; tail with bands . . . . . **Immature Redshoulder**
        - F. Tail with 3-4 narrow white tail bands showing . . . . . **Adult Redshoulder**

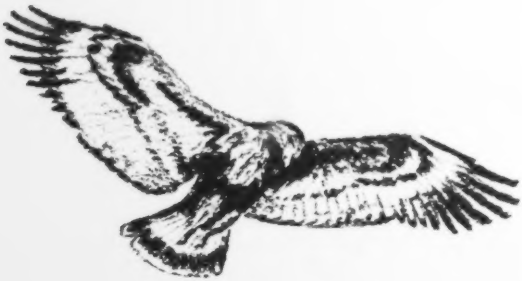
- ABOUT CROW SIZE–16-22 inches
  - I. Slender long-tailed hawk with white rump . . . . . **Harrier**
  - I. Rump not white–J.
    - J. Masked face and notched beak . . . . . **Peregrine**
    - J. No mask–K.
      - K. Streaked below–L.
        - L. Tail long and rounded at tip . . . . . **Immature Cooper's**
        - L. Tail short, with 5-7 dusky bands in tail . . . . . **Immature Broadwing**
      - K. Breast barred (picture)
        - M. Tail long . . . . . **Adult Cooper's**
        - M. Tail short with 2-3 wide white tail bands showing. . . **Adult Broadwing**
          (If the tail has more bands, try adult Redshoulder)

- ROUGHLY ROBIN-SIZED–10-14 inches long
  - N. Bright reddish and black above; facial mask prominent . . . . . **Kestrel**
  - N. Bluish gray above–O.
    - O. Facial mask present but not prominent . . . . . **Merlin**
    - O. No facial mask; tail long and square at the tip . . . . . **Sharpshin**
      (If the tail is somewhat rounded, try Cooper's)

Adult
Immature
GOLDEN EAGLE
BALD EAGLE
Adult
Immature
Immature
Adult
TURKEY VULTURE


ROUGH-LEGGED HAWK
Dark Phase
Normal Phase
RED-TAILED HAWK
Adult
Immature
GOSHAWK
Adult
Immature
OSPREY
Male
Female
RED-SHOULDERED HAWK
Immature
Adult
HARRIER


SHARP-SHINNED HAWK
Adult
Immature
Adult
COOPER'S HAWK
Immature
BROAD-WINGED HAWK
Immature
Adult
MERLIN
Female
Male
KESTREL
PEREGRINE FALCON
Immature
Adult



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Rough-legged Hawk

Rough-legged hawks nest in the far wild treeless barrens of the north: the tundra. Every winter many migrate through or into Wisconsin. These big birds are often mistaken for bald eagles and it is no wonder that they confuse so many bird students for they come in so many colors. There are light-colored roughlegs, brown and black roughlegs and roughlegs that are entirely black. Youngsters from the same nest do not necessarily look alike, and those that are dark with almost white heads do look like adult bald eagles.

The roughlegs actually have almost furry legs, for they are feathered to the toes with soft feathers. They have small, not powerful feet, neatly adapted to grappling with a mouse. Roughlegs do much of their hunting by hovering with beating wings over likely looking mouse meadows. Of the larger than crow-size hawks only three hover as though suspended from the sky by an invisible string: the roughleg, the osprey, and, more rarely, the redtail. Most roughlegs unlike other big hawks show white at the base of the tail feathers, so if it's hovering and shows white on the base of the tail, it's a roughleg that has wended its way down from Eskimo country.

Normal phase, dark phase and light phase.

Female

Male

It is not possible to determine the sex of most buteos by plumage. Rough-legged hawks are an exception.

Red-tailed Hawk

The red-tailed hawk is probably the most often noticed hawk in Wisconsin–especially after one has the hang of recognizing that the young birds do not have red tails; they just have indistinctly barred sparrow-colored tails. The underparts of young redtails have distinct dark markings on the lower breast rather than the dark-bellied look of the roughlegs.

Redtails like most of the medium-sized raptors do not breed until their second year. (Only little birds of prey breed in their first season as a rule).

They drop their rather nondescript tail feathers and molt into the adult plumage when they are a year old. There was once a story about a hawk named "Hook" that was so old–maybe 20 years old–that his feathers were all worn. The story won a prize, but it was nonsense, for hawks as well as other birds, molt their feathers each year and grow new ones. No bird of any sort hangs onto its old feathers. One by one the old, worn feathers drop out and are replaced by new ones.

Redtails come in a number of color phases ranging from pure white albinos to deep blackish melanistic individuals. These aberrations are rare in Wisconsin.

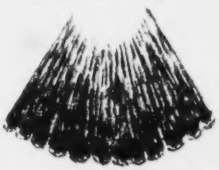
Several races of redtails may occur in Wisconsin.

Redtails prefer a mixture of open farmland and mature woods. Redtails are most often seen soaring or perched on dead trees or poles. Sometimes they hover and could be mistaken for roughlegs. Nests are usually built far out on branches of big trees near the edges of woodlots, especially in southern Wisconsin. Adults sometimes start perching side by side in early February and may chase away intruding members of their own species. Both sexes build, placing sticks carefully. From time to time the hawk thumps down on the nest with its breast with violence enough to break any weak

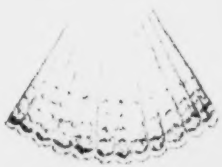
One by one the old worn feathers drop out and are replaced by new ones. The tail feathers of the immature are longer than those of the adult.

Eastern redtail

Western redtail



Harlan's hawk



Krider's hawk

branches in the substrate. The nest is lined with finer materials such as old corn stalks. The 1 to 4 eggs are incubated about 30 days.

Redtails feed their young primarily on small mammals, but may catch animals as big as a skunk or pheasant. Like all birds of prey, they are most apt to take the sick or injured—more or less acting as Nature's sanitary corps. The tiny whitish down-covered young are fed chunks of meat about half the size of a pea, moistened by the saliva of the adult. As they grow older they swallow bigger and bigger pieces and before their feathers have grown they can tear up their own food.

By the time the young redtails have left the nest, most of them have suffered from myiasis—a common childhood disease of hawks. The disease is caused by a pretty bluish fly that lays its eggs at the ear opening of nestlings. The eggs hatch into maggots. These crawl into the ear and suck blood until it is time for them to pupate and drop out of the ear. Children seem to be bothered more by chicken pox than the young hawks are by myiasis. The hearing of young hawks does not appear to be impaired by the disease.

Red-shouldered Hawk

The red-shouldered hawk is primarily a bird of the southeastern United States. It nests in Wisconsin in damp woods along our streams and, unlike the redtail, tends to build its nest in a crotch near the trunk of a tree. The nests are sometimes decorated with nests of tent caterpillars, and even with old oriole nests. Three to five, most commonly four, eggs are laid. Both sexes incubate. A returning female, during a cold shower, has been seen to settle on her mate's back when he refused to leave.

Redshoulders have small, relatively weak feet; they feed on

Unlike the redtail that has a wide variety of landscapes in which it can breed and hunt, the redshoulder exists in a specialized niche: riverbottom woods.

earthworms, insects, crayfish, frogs, snakes, small birds and small mammals. Small mammals are often swallowed whole. The skin of the frog is somewhat poisonous and we have never known a redshoulder not to skin a frog. Frogs appear to be among the easier quarry for the young hawks to catch when they are developing hunting skills. We have seen one, in the excitement of the chase, jump into the water and paddle ashore with its wings to consume the frog at the water's edge. No young bird of prey needs to be taught how to hunt: they do need practice and an assured source of food (from the parents) while learning to hunt efficiently.

Stream straightening, impoundments and water pollution are all a threat to its existence in Wisconsin.

Broad-winged Hawk

The broad-winged hawk is the smallest of Wisconsin's buteos. Its call is a wailing "su-eeee-oh", called by John Burroughs "the smoothest, most ear-piercing note in the woods." The first time that I heard this call an immature broadwing was confronted with a dead porcupine. I

would describe the sound more like the wrong-way screech of chalk on a blackboard. This call is ordinarily used as a territorial scream to warn others not to trespass on their nesting area. The broadwing like most birds of prey has at least four different calls. Baby chicks cheep rather as baby domestic chickens do, older young utter a food-begging call, any hawk or owl when hurt or annoyed has a "pain chitter", and most frequently noted is the territorial call.

We have spent many days with broad-winged hawks in the wild and are puzzled that authors have referred to this swift bird as "sluggish" or as "having as little dash as any of our birds of prey". True, broadwings are remarkably unwary and permit even clumsy observers to come close, but we have not found them to be sluggish. We have found them fast and shifty on the wing when hunting and have more than once mistaken them for accipiters (which are supposed to be fast).

Unlike the red-shouldered hawk the broad-winged hawk does not need to nest in stream bottoms. It nests in woods, preferring, but not insisting on young woods with a prevalence of aspen.

Man's impact on the environment has marked effects on numbers of raptors. The broadwing is as secure as any Wisconsin species we can think of. Wisconsin is rich in woodlands–including young aspen growth. Broadwings rarely hunt over agricultural crops and are not bound to hunting along contaminated streams. Small openings in the woodlands–far from pesticide use–suffice for its frogging and snake hunting. It also

utilizes small birds and mammals, but these, too, are not in areas subjected to pesticide spraying. We can name no species that is so relatively immune to damage from pesticides.

Their migrations are the most spectacular of all North American hawks. Hundreds–even thousands–form "kettles" in which the circling hawks look like a swarm of bees. Like other hawks, they tend to settle in and take perches in stormy or foggy weather. When the sun comes out and the wind swings into the north and a front passes, they continue their migration.

To see broad-winged hawks, drive the back roads through aspen woods early in the morning during the first two weeks in May. Drive slowly, for it is easy to miss these small hawks perched inconspicuously in the woods about 1/3 from the tops of the trees. One drizzly morning I had counted seven. The sun came out and a breeze rose, so I climbed to the top of a tall pine as quickly as I could. I climbed above the shimmering sea of young hardwoods and the broadwings started to peel up into the sky–more and more of them–until a kettle formed to move on farther north. Not all migrated farther north: some stayed to nest in those very woods.

Brown and Amadon give an intriguing description of its hunting. "It usually seeks its food from a low perch. When it suspects prey is about to appear the eyes dilate, the tail twitches cat-like and with swaying body it launches itself downward at the proper moment. Small mammals, large frogs and snakes are skinned. Crayfish are eaten piecemeal; insects swallowed whole or eaten kite-like on the wing. Attracted by aggregations of vulnerable spawning toads, it gazes listlessly at this surfeit of food. Then gliding down, it checks its descent with a flap, seizes a toad and carries it back to the perch to devour, unless it is destined for a distant nest. The strings of toad eggs are not eaten and deck the twigs below the perch."

Accipiters

Cooper's Hawk

The Cooper's hawk is a medium-sized, long-tailed hawk. It was particularly hard hit by DDT because, although it nests in woods, it hunts near farms, and feeds chiefly on small birds. The sequence of picking up insecticide poisoning goes like this: A field is sprayed with insecticide such as DDT. The insects, both the valuable ones and the pests, die. Small birds eat the dying insects, and if the poison used is not biodegradable—and DDT is not—the poison from each such insect eaten concentrates in the tissues of the small bird. Next, when the concentrations of poison have become too high, the small birds die. Often they don't die very quickly; at first they are just slowed down—an easy prey to hawks. Sometimes they die in tremors.

Now the hawks have no idea of course why these particular small birds are so easy to catch. Cooper's hawks may hunt from their nest and undoubtedly sought out the fields of dying birds for easy hunting. Each time that a hawk eats a poisoned bird the poisons build up in its tissues in ever greater concentrations. Sometimes the poisons act like birth control pills and make the hawk sterile. Sometimes they make the hawk incapable of laying eggs with thick enough shells. Thin-shelled eggs break before the young can hatch. DDT is banned in the United States, but it is still sold to countries south of the border!

The nest of the Cooper's hawk is often high in a slender tree overgrown with wild grape. Mating occurs throughout nest building and egg-laying. The pair is apt to mate over and over again—each time that the male brings another stick to the nest. A day or so before the 4 or 5 eggs are laid, the nest is lined with flakes of bark. It looks like a crow's nest, but we have never known a crow to line its nest with bark. At hatching time the female is said to help the young chicks out of the egg. The newly hatched downy young appear rather late in spring when the wild grape is in bloom. The male takes his turn at incubating but like most hawks, he does most of the hunting for the family. Like all hawks—and I believe all people—they pluck birds before eating them.

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Remains at plucking perches near the nest give a good idea what the Cooper's hawk family is being fed. English sparrows were the commonest food in four nests that we studied.

From 1962 through 1970 I knew of no Cooper's hawk breeding territories in central Wisconsin. In 1971 I learned of 5, and by 1983 Robert Rosenfield had found an encouragingly healthy population. Perhaps the ban on DDT is having an effect in time.

Goshawk

The goshawk (pronounced gos'hawk rather than gosh'awk) is a bird of the north nesting for the most part in the boreal forests of Canada. The big, long-tailed hawk appears to be extending its range southwards and recently there have been several Wisconsin breeding records. It is a big, common, powerful bird. It feeds chiefly on resident woodland prey such as rabbits, hares, squirrels, ruffed grouse, and blue jays. None of these prey species are apt to be plagued by pesticide residues and indeed the goshawk appears to be thriving. It tends to come down from the north in late October and in November. These birds, like all accipiters, are sprint fliers and when they have chased their quarry into bushes or into a bramble patch they follow on foot. I have seen a goshawk try to follow a rabbit down a hole, but it soon recognized that there was no use and it had to back out.

Like all hawks, the goshawk often misses its quarry. One of the prettiest chases I ever saw was one noon when we flushed an entire flock of prairie chickens. Quoting from ALIVE IN THE WILD (Prentice-Hall, 1970): "...a goshawk tail-chased them. Singling out one prairie hen, the raptor followed her, almost closing the gap between them. We have clocked prairie chickens in flight at 55 miles an hour even when they weren't hurrying! It was hard to say how fast this bird was flying–to save her life.

"When the goshawk was only ten feet from its quarry, the hen flew lower over the snow. He was about to strike when the chicken plunged downward. Soft, powdery snow puffed in a sparkling cloud

where she disappeared. Baffled, and blinded by the snow, the gos missed his strike as he smashed to the ground. Seconds later, the hen, quicker than any hawk on the take-off, was heading for the safety of open spaces. Had the hen been injured or sick, death would have been swift for predators usually catch the weak and miserable."

Accipiters, unlike buteos, hardly ever feed on carrion. But they do remember where they have left a kill unfinished and may go back for another meal off the carcass. They tend to disdain meat found dead.

Goshawks, unlike the Wisconsin buteos, defend their nests with vigor. One to 5, usually 3, eggs are laid. Smaller clutches are laid in years when food is scarce, as is especially true of raptors dwelling in the north where prey species undergo violent fluctuations in numbers. The goshawk, like a number of other raptors, frequently decorates the nest with green twigs and leafy boughs sometimes dumping these unceremoniously on its helpless young. The male brings most of the food to the nest. The female tears it apart and feeds it piecemeal to the chicks. I have noticed that raptors typically eat the intestines of prey at the onset of and during the breeding season. The rest of the year they just tend to pitch out the guts with a quick flick of the head. Goshawks, like other raptors, do not as a rule feed their young intestines. Tiny young are fed boneless meat and as they get older, feathers, bones and fur are added to their diet. The young leave the nest when they are about 35 days old. Unlike songbirds, the leaving of the nest is not a final step in hawks. One can see an empty nest one day and a week later it may hold three big youngsters all eager for a handout from their parents. The nest gradually tends to become more of a dinner table than a home. Slowly the young gain strength and hunting experience and at about 70 days of age they are ready to hunt for themselves.

Sharp-shinned Hawk

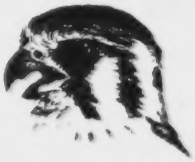
The sharp-shinned hawk is a small creature, scarcely bigger than a robin. The name sharp-shinned hawk used to strike me as faintly irritating—one of those silly names given to birds—until I caught my first sharpshin while banding hawks. It was a male so it was indeed small and the legs did not look much fatter than a common kitchen match. It was their shape that fascinated me; those legs were streamlined, flattened, sharp and quite unlike the legs of an ordinary bird.

The sharpshin breeds throughout its range more or less sparsely. The center of abundance during the breeding season is in the eastern provinces of Canada. The most southern nesting record I know of in Wisconsin was near Plainfield. The nest was about 25 feet up in a second growth white pine, and when I climbed to band the young they did something I have never known young hawks to do. They jumped out of the nest although they were too young to fly. One by one I caught them as they passed by me, stuffed them inside my shirt and carried them back to the nest where I banded them. Then I covered them with pine needles to soothe them and sneaked down the tree. All three young fledged successfully. I also banded the female parent, a bird in immature plumage.

Sharpshins feed primarily on small birds and not infrequently tackle quarry far bigger than themselves. They have been known to strike down a fully grown night heron that chanced abroad by day. "The heron was flying from one island to another across some marshes, when the hawk darted out of a neighboring wood and pounced upon him. The force of the shock was so great that the slowly moving heron fell to the ground at once but, fortunately for him, in falling, he gave vent to one of those discordant squawks...this so astonished the hawk that it forgot to take advantage of its prostrate prey." (Bent, 1937)

It scarcely matters whether one speaks of the balance of nature or of food chains. Whatever term you prefer, certain principles are involved. Predators are less abundant than their prey. This insures them a sufficient food supply. In general the bigger predators tend to kill bigger prey. Bigger prey is scarcer—for example there are fewer rabbits than mice—so the bigger predators tend to be less abundant. The sharp-shinned hawk is a good example of an abundant bird feeding for the most part on small quarry.

Falcons



Some people, especially the British, do not consider falcons hawks at all. Who knows why? At any rate we will include them among the hawks. Most falcons can be distinguished in the field by their facial masks and if one gets a closer look one can notice the notched beak. All falcons have notched beaks. Falcons, unlike other hawks do not go in for nest building. They tend to make a scrape on a cliff ledge or take over some old nest of another species. Falcons often fly high above their quarry, then fold their long pointed wings and stoop, striking it in the air. The stoop of a large falcon sounds like tearing silk, as it cuts downward through the air.

Peregrine Falcon

The peregrine has never been a common bird. It is a big falcon, partial to eating blue jays and flickers as well as common pigeons, shorebirds and sometimes ducks. I used to know of 17 eyries (nesting sites) in Wisconsin. The eggs were laid in scrapes in natural crevices or ledges in sandstone cliffs. The peregrine no longer nests in Wisconsin. In general the story runs like this: Eggs laid, young reared; then eggs laid,

young die, no young reared; then no eggs laid—or eggs so soft shelled from pesticide residues in the parents, that the eggs fail to hatch.

Finally a pair would occupy a nest site and not even lay eggs. The pesticide story. The peregrines from the far north still pass through Wisconsin on their way to South America, but Wisconsin has lost its peregrines to "progress". Now the birds from the far north are showing contamination as well. . . .perhaps man will wake up in time. Or perhaps because of man's greed and his fecundity the peregrine, a circumpolar species, will disappear from this earth forever. Captive breeding may well tide them over from extinction. A handful of falconers have successfully taken the lead in this worthy research.

Merlin

The merlin is common in Wisconsin only during the short periods in spring and fall when it passes through the state travelling the flyways. Merlins tend to prey upon shorebirds and the great flocks of migrating shorebirds guarantee them an abundant food supply as they make their journeys to and from their nesting grounds. They nest for the most part in Canada and winter from the deep south all the way to South America. There are a very few nesting records in this state. Merlins tend to nest in old crow's nests or sometimes in hollows in large trees.

Merlins are smaller than peregrines—roughly blue jay size—and almost entirely lack the facial mask that is so characteristic of most falcons.

One might be lucky enough to find a merlin's nest in the northern half of Wisconsin. If falcon-shaped birds with longitudinal streaks on their breasts start circling and giving a series of sharp "Biks", a merlin's nest may be within a half mile.

Kestrel

The kestrel is a tiny—robin-sized—falcon, the most brightly colored of all our hawks. It is the only small hawk with a facial mask and the only one with a rusty red back. It breeds throughout most of North America. Insects, particularly grasshoppers, are eaten in quantity and mice and some small birds are taken as well. The kestrel often hovers over a field as though hunting from an invisible perch in the air, but most of its hunting, in Wisconsin at least, is from trees, phone poles and wires.

These falcons nest in abandoned buildings and old woodpecker holes, and take well to man-made nest boxes. Man's passion for tidying up the landscape by tearing down old buildings and getting rid of dead trees works against many a kestrel's chance for breeding. Kestrels were known to nest in the prairie chicken study areas of the Buena Vista and Leola Marshes in Central Wisconsin only three times over a 20-year period. . .and all three times were in abandoned buildings. To see whether lack of suitable nest holes was keeping kestrels away 50 nest boxes were put up and as a result within 3 years more than 100 young kestrels were reared that wouldn't have been if it hadn't been for the boxes!

The boxes were about 9 to 12 inches square, with a 3-inch entrance hole. At first we made round holes. Square holes are far easier to make and we found that round birds fit through square holes very nicely. We put hay on the floor of each box so that the kestrels could incubate comfortably without having the eggs roll out from under them. Some of you will wish that you lived in the country so that you could put up nest boxes. Kestrels and some of the owls often nest in the city, feasting on mice and insects in parking areas and vacant lots.

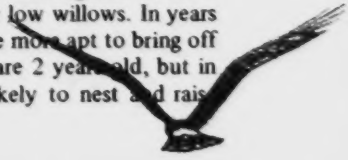
Few people ever put up boxes just to see what is going to inhabit them, so if they are striving to help bluebirds or kestrels, they tend to be distraught if they get English sparrows, starlings and squirrels instead. Our advice is to enjoy what comes. If you must discourage squirrels or mice to keep you happy, put a moth ball above the entrance. Most birds can't smell at all, but the mammals will shy away. Do not use too many moth balls and keep them outside the box, as the fumes are poisonous. For box construction see Barquest, Craven, and Ellarson if you wish precise details.

Not only are female raptors usually larger than the males, but the young—just before they leave the nest—are bigger than they are ever apt to be again. Dale and Elva Paulson told me of young kestrels that they found in a cavity in a building. The young males popped out of the hole upon their approach, but a young female was too big to squeeze out of her "prison". The Paulsons enlarged the entrance with a jack knife, possibly saving the young female's life, for the parents might well have lost interest in feeding a youngster that did not leave the nest on time. On the other hand starvation might have slimmed her down to the point where she was no bigger than her mother before it was too late to hunt with the rest of the family.

Harriers

Harrier

There is only one species of harrier in North America. This, rather a large, small-bodied hawk, is most often seen skimming low over marshes and meadows. Both sexes can easily be identified by their white rump patches. Adult males are gray or almost white with black-tipped wings. The females and young of both sexes are brownish. This species nests in northern United States and throughout most of Canada. The nests are on the ground, often near low willows. In years when meadow mice are abundant, the harriers are more apt to bring off young. As a rule they do not breed until they are 2 years old, but in good mouse years even the one-year-olds are likely to nest and raise their young successfully.



Many people are under the impression that hawks mate for life. For the most part nobody really knows. It is known that harriers usually do not mate for life and furthermore in good mouse years, bigamy is not uncommon: the "less favorite wife", however, does not have much chance of raising her young successfully. The male, who does most of the hunting for the family, often does not bring her enough food.

Harriers that have reared young successfully tend to come back to the same area to nest another year, but if their nests have failed they disappear, presumably to try somewhere else.

In April one sometimes sees an almost white hawk looping the loop in great arcs like a hoop rolled across the heavens. At the top of each loop, the sun blinks on its plumage as the bird twists in a barrel roll like a stunting aviator. This is the sky dance of the harrier—the mating display. After spraying of DDT and other chlorinated hydrocarbons from planes became common in 1963 I saw no more sky dancing and feared that it was gone forevermore from our marshes. Now, in the early 80s, harriers have started to dance over Wisconsin's marshes and meadows again.

These birds thrive best near wetlands. Wetland preservation helps not only ducks, geese, and bitterns, but also the harrier, hawk of the marshes.

Osprey

The osprey, in Wisconsin, nests mostly in the northern part of the state. It is dependent on open water for fishing and winters in far places such as central South America.

It is often mistaken for a bald eagle. It is actually not nearly as big, but it is one of the largest of our hawks and unless one looks closely for the dark eye stripe, one might be confused.

Ospreys sometimes cause bald eagles to drop their fish, but eagles pirate ospreys more often.

In Wisconsin the osprey has shown a remarkable tolerance toward other fishermen. Sometimes the female sits quietly on her big stick nest in a dead tree within sound of spinning reels and the plop of artificial baits landing in the water almost under the nest. When the male brings in fish for the family there is a melodious chirping, strange for so large a bird. The most successful nests tend to be in dead trees in man-made flowages. In the early days, before the white man came, it must have been the

beaver dams that flooded timber and gave the ospreys first-rate nesting sites. Wisconsin's waters appear to be more seriously contaminated than our earth and our air: the osprey–dependent on fish–needs clean waters.

To watch ospreys dragging their feet over the surface of weedy water on the chance of catching a fish, or plunging into deep clear water to try for a fish they have spotted from on high, visit the flowages in Northern Wisconsin in mid-July when they are feeding their floppy scarlet-eyed youngsters. Those who have watched ospreys near their great nests in the tall water-killed trees may well acquire a new dimension. Dead trees are not only needed, they are beautiful.

Eagles

Bald Eagle

From the land of sky blue waters
Come the fish to feed our eagles
Let us keep our sky blue waters
Free from poisons, pure and clear.

The bald eagle nests in northern Wisconsin. More come to Wisconsin to winter. They feed almost entirely on fish, but may feed off old deer carcasses and carrion of various sorts. Adult bald eagles have white heads and white tails; the immatures are entirely dark–almost black.

Man-made dams have unnaturally concentrated wintering eagles along the Mississippi River. (To watch eagles, wait until the temperatures have been well below zero for several days and turned most of the rivers into ice. Then watch below dams, for example at Cassville, Prairie du Sac, and Petenwell.)

But one must recognize that such concentrations are a bad situation especially on the Mississippi River. Fish from that river are even unsafe for people to eat, and send the eagles back to their breeding grounds with contaminants in their tissues. It would actually be better by far if the eagles wintered in a wide variety of places in the south as they used to do. We are stuck with the dams, and at least for the present with a highly contaminated river. Eagles, people, and even endangered clams need clean rivers.

It is safe to watch an eagle nest from a distance for short periods–20 minutes at a time–during early summer when they are feeding their young. Bald eagles are most apt to desert their nests about the time the eggs are being laid. Eggs are laid early, when snow is on the ground. Don't take a chance and snowmobile near an eagle's nest.

Eagles can eat in peace in winter; there are no ospreys to harass them.

Golden Eagle

The golden eagle is primarily a bird of the west. It nests on cliffs or in trees and like the bald eagle, often does not use the same nest year after year but builds another nest as though for variety. It is not unlikely that this changing of sites reduces the numbers of nest parasites that might affect the young. The golden eagle has not been known to nest in Wisconsin in recent years.

Golden eagles feed primarily on rabbits, hares and carrion. Ranchers place heavy blame on them for killing lambs and tend to assume that any eagle feeding on a lamb must have killed it! The Field Key to Hawks on Page 10 tells how to distinguish between bald and golden eagles, but if you get a really close look, note the legs: only the golden eagle has legs feathered to the toes.

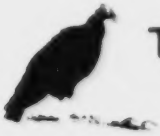
Bald eagle

Golden eagle

The golden eagle—as it feeds on mammals—suffers less from poisoning by pesticides. In the west it has suffered for many years from direct human persecution, deliberate poisoning, trapping and shooting. . .and on the other hand, federal legislation has been so strict that it has been exceedingly difficult for those who love these birds to work with them.

If you want to see a golden eagle in Wisconsin, watch in late November and in early December at the hawk migration flyways. Golden eagles pass through Wisconsin long after the hawk migration has passed its peak. Watch for the "windows" in the wings of the young birds.

Vultures



Turkey Vulture

The turkey vulture is a large, eagle-sized bird. Unlike other birds of prey the male is larger than the female! It is the only Wisconsin raptor that feeds almost entirely on carrion. The turkey vulture is bald: it has no feathers on its head. (The bald eagle is not actually bald; its head feathers simply turn white when it becomes an adult). The baldness of the turkey vulture is practical as it often sticks its head deep inside long-dead horses, cows or deer to pull its meal out.

Its range in general is farther south, and in 1972 I knew of only one breeding record in Wisconsin. But in 1983 the turkey vulture is nesting in several widely scattered areas—mostly in rocky bluffs. We might speed up the spread by placing A-frame vulture houses on rockless hills. Joseph Jacobs designed some in New Jersey. The dimensions in feet were 2½ wide, 2½ high, and 3 deep (the back was closed). The houses were covered with brush; vultures accepted them as nest sites.

The nests are usually in cavities in cliffs. If one approaches a nest too closely, the young vomit their food and the stench of partly digested offal is strong. This is particularly odd as the turkey vulture is strongly suspected of being able to smell. Paul Drake, a Wisconsin bird bander, once tried to attract turkey vultures by lying on a bluff along the Mississippi River in southern Wisconsin pretending to be dead. It is my well-considered opinion that he would have been more successful if he had put a piece of meat in his pocket that had been declared "unfit for human consumption" four days before.

Vultures are important scavengers. On the ground they are clumsy as they hobble eagerly about dead carcasses. In the air they are among the most graceful of all birds. They can be distinguished from eagles in flight as they hold their great wings slightly higher than horizontal. Their wings are two toned, the flight feathers being noticeably lighter. If one is lucky enough to get near feeding turkey vultures, one can see the grayish heads of the immatures and the red heads of the adults.

OWLS

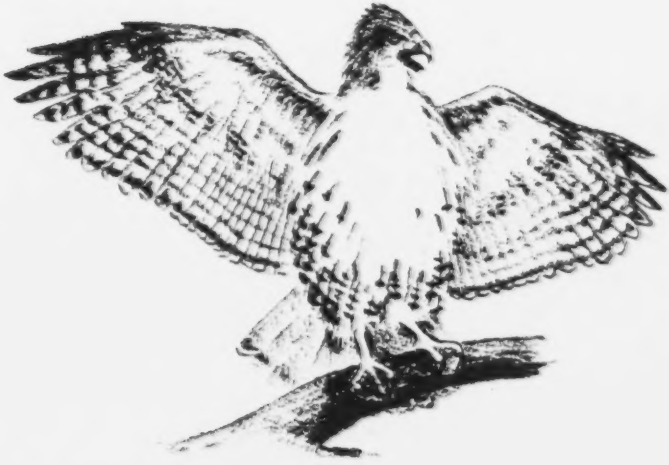
Owls, like people, have their eyes in front of their faces (not on the side of the head like hawks or horses). Their eyes, however, are in a fixed position so they have to move their heads to look at anything that is not straight in front of them. A man can look over his shoulder; an owl can turn its head farther around and look over its back. Actually an owl cannot turn its head much farther around than a robin can. If you walk round and round a sitting owl to test the old story that an owl will twist its head off, you will find that it can do nothing of the sort. You will also find that most owls—unless they are very tame—will fly away.

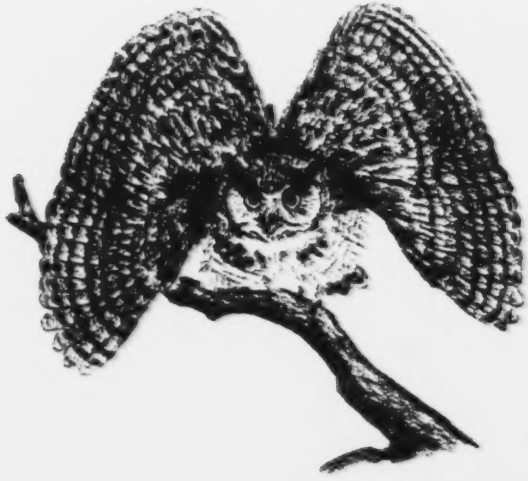
Hawks almost always build their own nests. Owls don't. They find a place to lay their eggs. See pages 56-57 for suggestions on how to attract owls.

Sometimes one can find owls perched in the woods and a few species even fly about and hunt in the daytime, but in general the best way to start studying owls is to look to see where they have been by reading sign by daylight. Look for pellets on the ground and the chalky whitewash. Listen, too, especially at dusk or daybreak, and if you can imitate calls well or have an Audubon bird caller, you may attract owls that you would not otherwise have seen.

Hawks and owls both have sharp talons and strong hooked beaks but they differ in their hunting tactics—one could almost say they differ in their approach to life. Hawks often miss their quarry; owls seldom miss. They are more apt to wait and wait until they are sure of making a kill.

Occasionally one comes upon a hawk or an owl that is injured or cornered. They will go into a threat display.





Hawks and owls are not really closely related. One of the extremes in their behavior is in their dissimilar threat postures.

Field Key to Owls

A. CROW SIZE OR LARGER

B. White, may have some dark barring . . . . . Snowy Owl

B. Not a white owl–C.

C. White breast, few spots . . . . . Barn Owl

C. Breast streaked or barred–D.

D. Ear tufts present–E.

E. Ear tufts far apart; large owl . . . . . Great Horned Owl

E. Ear tufts close together; crow size–F.

F. Ear tufts conspicuous, well above crown . . . . . Long-eared Owl

F. Ear tufts tiny, hardly noticeable . . . . . Short-eared Owl

D. Ear tufts absent or apparently so–G.

G. Streaked breast and throat, crow size, eyes yellow . Short-eared Owl

G. Streaked breast, throat barred, eyes black . . . . . Barred Owl

G. Breast and throat streaked and barred, black chin-spot, large eyes yellow . . . . . Great Gray Owl

A. SMALLER THAN CROW SIZE

H. Ear tufts conspicuous (widely spaced) . . . . . Screech Owl

H. No ear tufts–I.

I. Breast plain brown, tiny . . . . . Immature Saw-whet Owl

I. Breast streaked or barred–J.

J. Breast streaked–K.

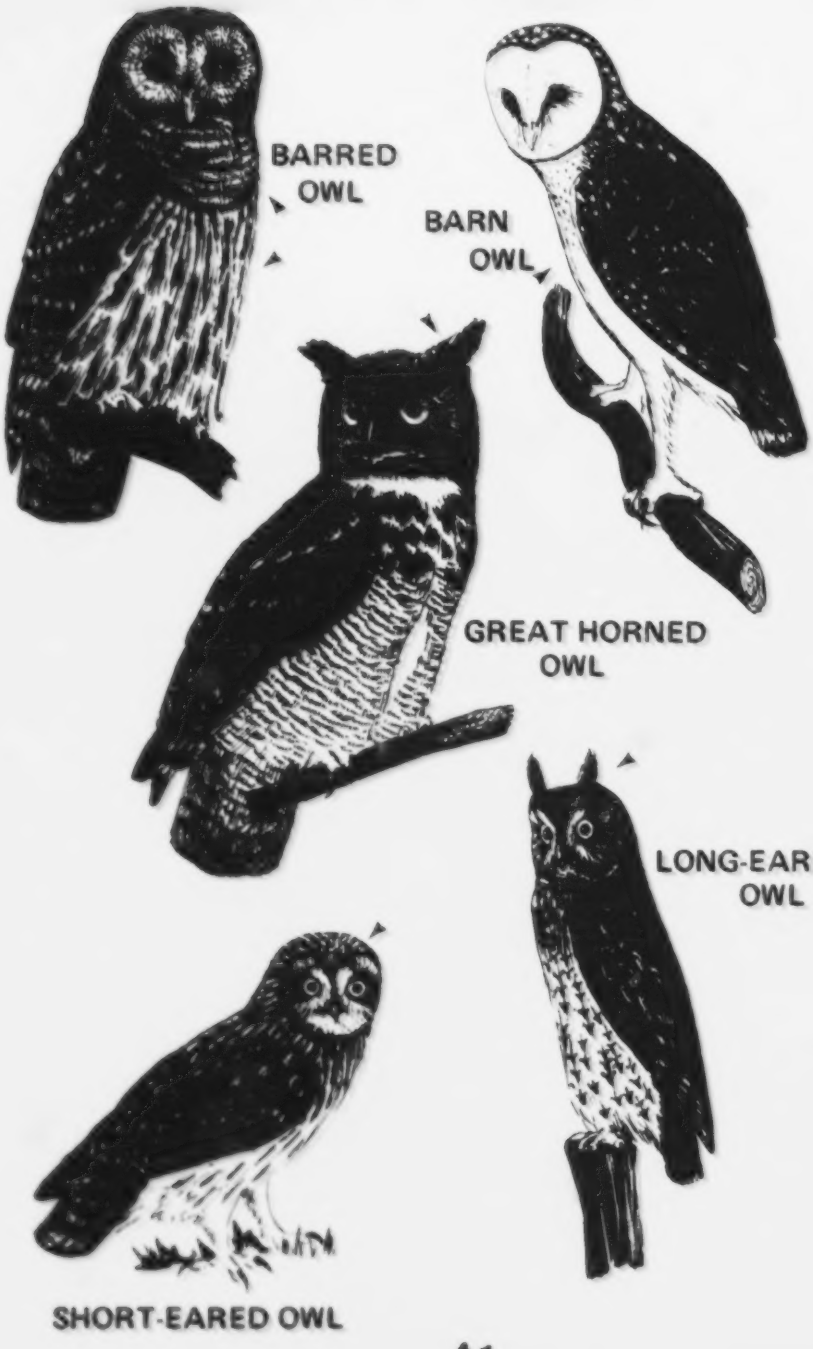
K. Black beak, no spots on forehead, tiny . . . . . Adult Saw-whet Owl

K. Yellow beak, spotted forehead, black facial frames . Boreal Owl

J. Breast barred–L.

L. Long tail, heavy black facial frames, bobs its tail when perched . . . . . Hawk Owl

L. Short tail, long legs, prairie habitat . . . . . Burrowing Owl


BARRED OWL
BARN OWL
GREAT HORNED OWL
LONG-EARED OWL
SHORT-EARED OWL

SAW-WHET OWL
GREAT GRAY OWL
SCREECH OWL
HAWK OWL
BOREAL OWL
Female
Male
SNOWY OWL
BURROWING OWL

Great Horned Owl

The great horned owl is the largest owl commonly nesting in Wisconsin. Not only does it breed throughout the state but it is indeed possible that this species breeds in more counties in North America than any other species of bird!

The female weighs over 4 pounds and the male only a little more than 3. Horned owls sometimes nest on cliffs or in hollows in trees, but most commonly they utilize old nests of red-tailed hawks. It is not uncommon for the same nest to be used year after year but the horned owls often alternate with the redtails! Owlets hatch covered with down. Owls, unlike baby hawks, are born blind and as they cannot see, the parent owl lifts the baby's tiny head in her great foot to hold its beak up to feed it.

Horned owls can see fairly well when they are nine days old. Their parents feed them throughout much of the summer, but when they have become self-sufficient it is said that they like many other raptors, are driven away from the home territory. The young owls may travel 50 miles or so. Adult horned owls tend to stay near their nesting territories. Unless you live deep in the city, there is probably at least one horned owl within 3 miles of your home. Owls, like almost all the hawks, are territorial and will not allow others of their own species to nest near them, so horned owl nests tend to be at least a mile apart.

One of the main reasons that owls call is to defend their territories from others of their own kind. The horned owl is our earliest nester: eggs are often laid in late February. Before the eggs are laid, in January and in early February, is the time to listen to the deep WHOO, WHOO-WHOO, WHOO-WHOO, WHOO of these owls. Select a still night near the full of the moon and listen for the call of the male, often interrupted by the slightly higher-pitched voice of his spouse. If you are extraordinarily lucky you may see an owl display to his mate. With ear tufts raised, tail up, he reminds one of a prairie chicken as his low melodious call carries far over Wisconsin's fields and marshes.

Great Gray Owl

The great gray owl is even larger than the great horned owl and has no ear tufts. There has been a dramatic increase in records of this northern species in the last 10 years, with 8 or so records every year now—mostly in the northwest, but a few in the central part of the state. Don Follen Sr. saw two fledged young 6-8 weeks old in Douglas County in 1978. This looks like a Wisconsin breeding record!

These owls are far less wary than the great horned owl and it is often possible to get close enough to them to look them in the eye. The eyes are yellow. Those of the barred owl, a smaller somewhat similarly marked species, are black.

Snowy Owl

The snowy owl breeds in the far north on the tundra. Some almost surely invade Wisconsin every winter. But every three or four years or so, dozens—perhaps hundreds—come down to take advantage of the rats on city dumps and the "runner" muskrats trapped above the ice. Runner 'rats are those unfortunate individual muskrats that have been evicted from their home territories because of food shortages and/or overpopulation. Some believe that the snowies have been driven south for the same reasons. These great white owls have no fear of the cities. They roost on roof tops in suburbia and on smoke stacks downtown and appear just as at home as on more natural habitats—the pressure ridges on Wisconsin's larger lakes.

Snowy owls tend to sit quietly on low perches during most of the day, but as the shadows lengthen, they fly to higher perches to hunt from. The best chances for seeing snowies are in the late afternoon, although they sometimes make themselves conspicuous even at noon.

They are capable of killing jackrabbits and can catch coots and ducks. Like most owls, they can carry heavier prey than hawks of the same weight can. The owls that commonly nest in Wisconsin, if they have killed something bigger than they can eat at one meal, hide the residue so that they can come back and feast on it at a later time. I have watched snowies for many long hours and have never known them to cache food. If they are forced to fly, they carry any meat they may have on hand with them. If they are left in peace, they spend the day with their food underneath them—almost as though incubating it—and when mealtime comes they pull it out from under their feathers where it has remained relatively warm and begin again to feast. Perhaps it is because they often winter in regions of trackless drifting snow where it is difficult to find a cache again, or perhaps it is because they prefer their meals unfrozen, that they have developed the ability to carry food to such an astonishing degree.

In most owls it is impossible to distinguish between the sexes by plumage. The adult snowy female is not only bigger, but her plumage is markedly flecked with dark, almost black markings. As these birds are often abroad by daylight, one can find them if one looks hard especially near the big cities on lakes: Superior, Green Bay, Oshkosh, Fond du Lac, Milwaukee, and Madison.

Barred Owl

The barred owl is but a small owl under his brave show of feathers.

The barred owl actually looks big, but this is not due to a big muscular body, but to the way it fluffs out it feathers. The body of a skinned barred owl is far from impressive in size. I learned this to my amazement when I prepared one for a museum.

A look at the prey of the barred owl reflects its rather puny body. It catches primarily crayfish, insects, small mammals, fish and some small birds. Barred owls are common in river bottom woods and tend to share the habitat of the red-shouldered hawk. The barred owl's call could be represented by WHA–WHA–WHA–WHAAH, WHA–WHA–WHAH–WHOOAH, but again and again–as it does to those in the south–the barred owl seems to say, "Who cooks for you? Who cooks for you-all?"

These owls are secretive and strongly nocturnal. They nest in holes in trees, in open-topped dead stubs and also in old stick nests. The destruction of old "wolf trees" that have holes and will never make good saw logs is undoubtedly reducing the barred owl's chances for finding nest sites. Straightening streams or flooding valleys removes habitat from barred owls. But they are far from a threatened species and losses in the near future will be local only.

March is the month of madness for barred owls; the breeding season is upon them, and instead of remaining shyly in the deep woods, they take to the open country, they call, and it would seem by the end of March that each and every barred owl is intent on advertising his presence to the people of Wisconsin.

Long-eared Owl

The long-eared owl has long ear tufts placed rather close together. When one spots a wild owl, the owl has usually spotted the observer first and seldom looks normal. A frightened owl presses its feathers close to its body, raises its ears and seems to try to look like an old dead branch. Long-ears do this to such an extreme that unless one has watched a tame one it is hard to learn what they really look like.

Happy

Scared

Long-ears nest in stick nests built by other birds. They prefer conifers and they are more commonly seen in the southern part of the state. Like other woodland owls, they do most of their hunting in the open country catching mice for the most part.

In winter they congregate and 20 or more may roost in a pine thicket or in conifers in a cemetery. It is often possible to pick up pecks of pellets under such a communal roost after the snow has melted in spring.

Two hundred and twenty-five long-eared owl pellets from Iowa examined by Dr. Alexander Wetmore give an idea of the menu of these owls: song sparrow, 4; robin, 1; little shrew, 2; short-tailed shrew, 5; house mouse, 89; meadow mouse, 70; prairie meadow mouse, 18.

Short-eared Owl

The short-eared owl resembles the longear in size but the ear tufts are so small that they are almost useless for field identification. Like the peregrine falcon, this species is circumpolar–nesting all around the Northern Hemisphere, and also like the peregrine is not common. The peregrine is dependent on good nest sites–usually cliffs–and the shortear can find a nesting spot in just about any marsh or meadow. The peregrine can vary its diet enormously and is able to kill birds as big as a great blue heron. The short-eared owl cannot thrive without meadow mice. The peregrine is limited by nest sites and the shortear by its food habits. These are beautiful examples of limiting factors.

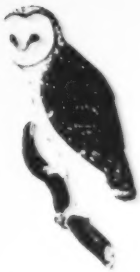
The short-eared owl's limiting factor–their dependence on meadow mice–has forced them to adopt a gypsy way of life. No one knows how the shortears find where the meadow mice are abundant. One year it may be near Delta, Manitoba; another in the Finger Lakes region of New York state. In 1970 it was in the Buena Vista Marsh in central Wisconsin. Up to that time there had only been about 10 nesting records for the state. Then came the great meadow mouse population of 1970 and after the young had fledged from at least 17 nests there were 104 shortears a-wing in the heart of the prairie chicken country. They fed almost entirely on mice. When carrying food to their young, they carried it in their feet, and transferred it to their beaks just before dropping it.

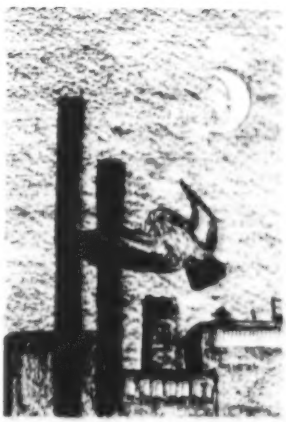
There is almost no variation in the food habits of the short-eared owl. Kumlein and Hollister mention one unusual pair that fed their young almost entirely on birds in 1898. Individual variation exists in every species.

Short-eared owls are most active in the hours just after daybreak and just before nightfall, so one can readily see their astonishing nuptial flight. It occurs in April, May and sometimes in early June. Usually one owl claps its wings under its body and–as it cannot maintain altitude and clap its wings at the same time–it partly falls while clapping. From nearby one can hear the soft pattycake sound of the wing claps. On April 25, 1955, Dan Berger watched two shortears approach each other from opposite directions; they locked talons, and spun horizontally all the way to the ground–at least six or seven complete turns. Another time they locked talons and did a vertical cartwheel.

One late afternoon in 1970 Peter and Caroline Conners ate their supper in the territory of a pair of short-eared owls; they watched the owls display and then, when they rolled out their sleeping bags under the sky, they listened to the short low hoots of the owls as they called to each other. Who can say how many Wisconsin couples were watching TV just then?

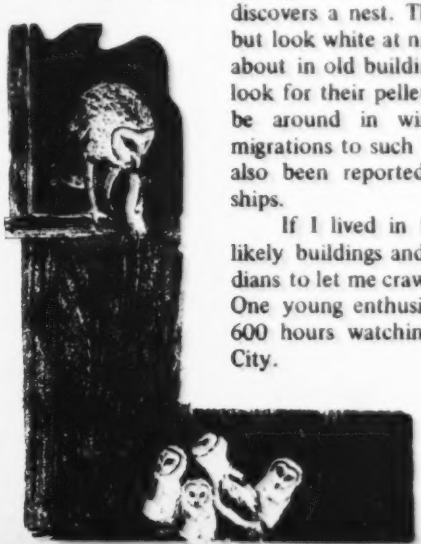
Barn Owl





The barn owl commonly breeds in the southern part of the United States but it is an uncommon breeder in Wisconsin. Breeding records are mostly in southern Wisconsin. These "monkey-face" owls tend to rear their big families (they lay 4 to 11 eggs) in barns or silos. In Texas they frequently utilize nest boxes. Some years ago barn owls set up housekeeping in the tower above the Fond du Lac firehouse and the firemen graciously tolerated bird-watchers of both sexes and many ages, traipsing through their dormitory and up the ladder to get a look at the owls.

These owls feed primarily on mice and seldom take prey larger than a full grown rat. They have nested in the same buildings with pigeons and left the pigeons in peace. City people often feel that they are cut off from bird-watching. Barn owls do not shun cities: they nest in downtown New York and it is highly probable that there are barn owls nesting in Milwaukee and Racine that no one has discovered.



These birds are hardly ever seen during the day unless one discovers a nest. They are light gold in color, but look white at night. To find barn owls poke about in old buildings and church steeples and look for their pellets. These owls are not apt to be around in winter as they perform long migrations to such places as Florida. They have also been reported far out at sea sitting on ships.

If I lived in the city, I would look for likely buildings and ask the janitors and custodians to let me crawl around near the roof tops. One young enthusiast did this. He spent over 600 hours watching barn owls in New York City.

In Germany farmers sometimes fasten nest boxes inside their barns, in high dark corners where barn owls can nest undisturbed by man and his chores.

From the foregoing one would get the impression that the barn owl had had no place to nest before the white man put up buildings. In the main body of their range they often nest in hollows in trees or cliffs and have even been suspected of nesting in holes in the ground, but Wisconsin is the northern limit of their nesting range. It appears that here they tend to need something special to entice them to nest. With one exception, all Wisconsin nestings have been in man-made structures...near a good food supply: rats or mice. The exception was in an oak in a pleasant residential part of Waupun.

Screech Owl

The screech owl looks like a miniature great horned owl. It is pigeon-sized, sturdy of build, and the big ear tufts are far-spaced on its head. These owls are aggressive in defending their nesting territories and, although they are not apt to nest downtown, they do nest in old apple orchards and have a predilection for nesting on college campuses where they are apt to try to defend their territories by dive bombing screaming coeds and knocking hats from professor's heads. Few, if any colleges have solved this problem by putting up a sign: DO NOT DISTURB, SCREECH OWLS NESTING.

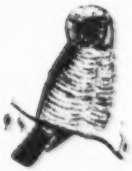
Few students have had a chance to watch young owlets lined up on a branch waiting their turn to be fed, for someone in authority has usually killed one or both parents before the young leave the nest.

As a rule they nest in natural cavities—holes in trees. Arthur Cleveland Bent, whose works on birds of prey I recommend to any raptor enthusiast, wrote, "Screech owls have been known to nest in bird boxes, set up for that purpose on trees or buildings, and they would probably do so oftener if given more encouragement; a little sawdust or excelsior in the bottom of the box is quite to their liking."

Put a porch inside the nest box so the owl can face the sun and watch the world go by.

The screech owl is neither an owl of the grasslands, nor an owl of the woods. It needs cavities to nest in and open country for its hunting. Johnny Appleseed, who travelled in the United States planting apple orchards, may have done more for the screech owl than anyone would ever suspect. Maples, apples and sycamores with natural cavities, and pines that woodpeckers have drilled nest sites in are often near enough to good hunting grounds for screech owls. To an astonishing degree screech owls have become birds of the suburbs. Few farms have old orchards anymore, and nesting hollows are becoming scarcer. Screech owls can adapt. If mice are in short supply they tend to feed on sparrows.

The two color phases of the screech owl cannot be accounted for by age or sex. Some individuals are destined to have gray plumage and others, red. A single nest may have both gray and red owlets—much as brothers and sisters may have blue eyes or black. Screech owls are more commonly killed on our highways than any other species of owl. We have examined road-killed owls for many years and find the gray and red phases to be about equally common in Wisconsin. Sometimes we have found a brownish one that does not clearly fit either phase.



Hawk Owl

The hawk owl, like the great gray owl, nests in the boreal forests of Canada and sometimes they invade northern Wisconsin. After an invasion a few may stay to nest, and so it was after the great invasion of 1963. Two nests were found north of Brule in Douglas County. One was in an old leaning maple and when I climbed to it after the nesting season, it was plain that a raccoon had climbed before me and broken up the nest. The other was in an old woodpecker hole and fledged young successfully. These little birds hunt by day, just as hawks do. In flight they look like a dark pigeon, but the moment they perch it is clear that they are far from pigeon-like when sitting. They sit upright like a parakeet with their long tails projecting well below their wing tips. Their call is more melodious and varied than that of any owl that nests in Wisconsin.

The hawk owl is abroad during all hours of daylight. We have watched them flying and hunting at high noon, but they can see better in the dark than we can: we have seen them spot quarry when it was so dark that we could barely see the owl itself, far less what it was after. Hawk owls are swift on the wing. They tend to swoop from a high perch, fly low over the ground and rise almost perpendicularly on approaching another perch. They feed on small mammals and birds. They successfully tackle prey far bigger than they themselves are. A hawk owl weighs 12 ounces and has no trouble killing an 18 ounce ptarmigan!

Hawk owls like many creatures from the north are preposterously unafraid of people and one can often walk up to within 10 or 12 feet of one without causing it to show anything other than faint curiosity.

Saw-whet Owl

The saw-whet owl is tiny, about 7 inches long and weighing only 4 or 5 ounces. It nests in the forests of Canada and in our northern states. Not many nests have been found in Wisconsin as this is a nocturnal species and the little owls sit so tight when one walks by them by day that one is not apt to notice them.

Deer hunters—long quiet on stands—watching for any slight difference in the woods sometimes spot a perched saw-whet. There is the story told by one: a small object fell on the oak leaves at his feet. Puzzled, he picked it up: a pellet. Slowly, he looked up and found himself confronted by a tiny owl that had been there right along.

Their favorite nest site is an old woodpecker hole. The Dutch Elm disease has killed many elms in Wisconsin's mixed woodlands. Woodpeckers are drilling their nest holes in these trees and it is possible that saw-whets may increase as a result.

The name saw-whet comes from the sound of its call: when heard at a distance it sounds like someone sharpening a saw blade. The clear, persistent bell-like note is most often heard in tamarack swamps and on warm evenings.

Unlike the hawks, owls are far less apt to travel along the great migration paths as they pass through Wisconsin. The saw-whet is an exception. It travels along the same routes that produced the great hawk flights by day. It is likely that this would have passed unnoticed had it not been for Wisconsin's bird-banders. Bernard Brouchoud has banded 133 saw-whet owls in a single season at one station, where he captured them in mist nets in cooperation with the Bureau of Sport Fisheries and Wildlife.

These birds feed primarily on beetles, grasshoppers, other insects and mice. They are hardy birds and some spend the winter in Wisconsin; most move farther south. One, banded in Wisconsin, was recovered in Arkansas, the first record of a saw-whet in that state.

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RARE VISITORS

Some raptors are rare world-wide; some are rare in Wisconsin in the sense that they only rarely enter the state, although they may be common elsewhere. The gyrfalcon, for example, seldom comes so far south, but is widespread and not uncommon in its normal range in the arctic.

There are several published sightings of the Ferruginous hawk in Wisconsin, including at least one summer record. This hawk is usually pictured with legs feathered to the toes. At least some individuals have the lower portion of the leg bare.

There have been quite a few Swainson's hawk records in recent years—mainly from Cedar Grove and St. Croix County. These birds have a white throat and belly and a conspicuous reddish, buff breast.

The black vulture has a shorter tail than the turkey vulture, shown above for comparison. There are two, maybe three, black vulture records for Wisconsin.

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The Mississippi kite, a hawk that flies like a swallow, has only recently been recorded in Wisconsin. There are 11 records since 1970. Adults have plain gray underparts and dark notched tails. The tails of the immatures are barred below.

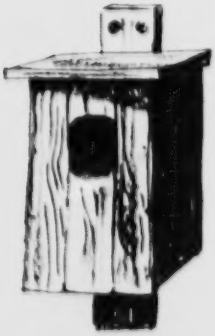
Although the swallow-tailed kite actually nested near Fort Atkinson and near Racine in the 1850s, there are only 5 sight records for the 20th century. One wonders whether the bird seen by William Koepp and James Hale in Door County May 15-17, 1982 was the same one observed by Richard Sharp in Oconomowoc 2 weeks later? The black and white pattern of the plumage and forked tail are diagnostic.

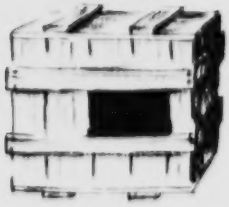
One single black-shouldered kite has been reported in Wisconsin. Superficially the bird looked like a male harrier, but the dark shoulder patches and thick legs were strikingly different from any harrier. The bird set up a territory in the Buena Vista Marsh which it defended against harriers and horned owls. This behavior of a single raptor's territorialism—well out of its normal range—was reported in the *Passenger Pigeon* in 1965.

The burrowing owl is rare in Wisconsin, but it is far easier to spot one as it likes the open country. It is easier to recognize as its long, almost bare legs make it the only owl that gives the impression of an owl on stilts.

The boreal owl is a rare winter visitor in Wisconsin. It can be distinguished from the saw-whet by its light beak, its dark facial border, and its slightly larger size. Like the saw-whet, it tends to be in woodsy places.

NEST BOXES





Nest boxes are primarily built for fun. It's nice to watch the birds.

Birds that always—or sometimes—nest in a hole may accept nest boxes, especially if the box is near a good hunting territory so that the parents can catch enough prey to feed their young.

No natural cavities have a flat floor. Add hay or sawdust to make a nest so that the parent can incubate without having the eggs roll out from under.

Every nest box should have holes in the bottom so that the nestlings won't get drowned out by rain. There should be holes or gaps near the top so that the birds do not get too hot when the sun strikes the box.

Raptors are no judges of architecture and hole nesters are poor judges of stability of their homes. Some people successfully attract raptors by securely nailing up old butter boxes, kegs and packing cases.

For those who like precise instructions on how to build a box we recommend Barquest, Craven, and Ellarson. Their specifications can be altered for the larger species.

Don't have the inside of the box so deep and so slippery that the young can't get out. Roofing paper or bark nailed under the hole provides them a ladder.

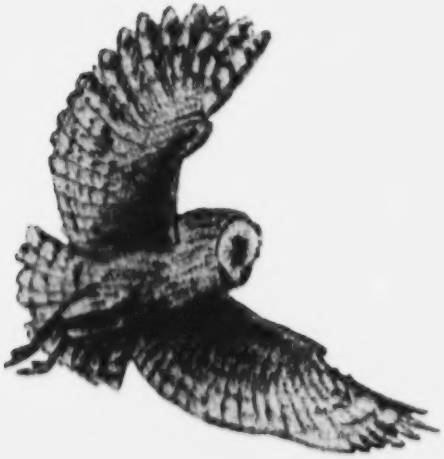
Owls like a little sunporch inside the box so they can stand comfortably and expose their faces to the sunlight. (See Page 51.)

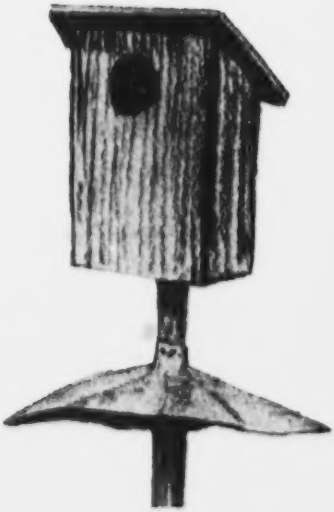
Nest Box Sanitation

It has been a mystery to me why anyone recommends cleaning nest boxes. Nesting cavities are not cleaned out under natural circumstances. Bent gives an example of a natural cavity that was used by barred owls for 9 successive years and Heintzelman's kestrels fledged year after year in uncleaned boxes.

At last I telephoned Professor Ellarson to ask why he cleaned nest boxes. "It hasn't anything to do with the birds. It's so the boxes will last longer!"

Researchers will wish to improvise doors so the box contents can be examined.





And Newer Ideas

One is an A-frame for turkey vultures. (See Page 34.)

Another is a nesting platform for ospreys. Put up near good fishing areas, these platforms are helping to bring back the osprey, now listed as endangered by DNR.

	Floor of Cavity	Depth of Cavity	Entrance above Floor	Diameter of Entrance	Habitat
Saw-whet owl	6x6	10-12	8-10	2½	woods and swamps
Screech owl	8x8	12-15	8-10	3	orchards and suburbs
Kestrel	8x9	14	10-11	3	farmland, barrens & cities
Barn owl*	13x15	21-24	15-17	5	cities and farmland
Barred owl**	13x15	21-24	15-17	8	near streams, woods
Great horned owl**	18x20	24-26	5-18	14	farmland, wood lots

Dimensions in inches

* Nest boxes can be placed in open country or in cities (but only where small mammals abound). They can be put on poles in fields where old buildings are not available.

** These big owls often nest in big, old stick nests, or in open-topped hollow stubs. They sometimes nest in cavities and might do so more often if man supplies more big cavities. Experiments have shown that barred owls take to boxes without roofs.

SCIENTIFIC NAMES

Bald eagle	*Haliaeetus leucocephalus*
Barn owl [Common]*	*Tyto alba*
Barred owl	*Strix varia*
Black vulture	*Coragyps atratus*
Black-shouldered kite	*Elanus caeruleus*
Boreal owl	*Aegolius funereus*
Broad-winged hawk	*Buteo platypterus*
Burrowing owl	*Athene cunicularia*
Cooper's hawk	*Accipiter cooperii*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
Goshawk [Northern]*	*Accipiter gentilis*
Great gray owl	*Strix nebulosa*
Great horned owl	*Bubo virginianus*
Gyrfalcon	*Falco rusticolus*
Harlan's hawk	*Buteo harlani*
Harrier [Northern]*	*Circus cyaneus*
Hawk Owl [Northern]*	*Surnia ulula*
Kestrel [American]*	*Falco sparverius*
Krider's hawk	*Buteo jamaicensis kriderii*
Long-eared owl	*Asio otus*
Merlin	*Falco columbarius*
Mississippi kite	*Ictinia mississippiensis*
Osprey	*Pandion haliaetus*
Peregrine falcon	*Falco peregrinus*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
Rough-legged hawk	*Buteo lagopus*
Saw-whet owl [Northern]*	*Aegolius acadicus*
Screech owl [Eastern]*	*Otus asio*
Sharp-shinned hawk	*Accipiter striatus*
Short-eared owl	*Asio flammeus*
Snowy owl	*Nyctea scandiaca*
Swainson's hawk	*Buteo swainsoni*
Swallow-tailed kite [American]*	*Elanoides forficatus*
Turkey vulture	*Cathartes aura*

*These "vernacular" additions were made by the AOU.

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